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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/605,479

10/02/2003

Kuang-Hua Lee

ACMP0033USA

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02/23/2006

NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION

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EXAMINER

DINH, TUAN T

ART UNIT

PAPER NUMBER

2841

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/605,479	<b>Applicant(s)</b> LEE ET AL.	
	<b>Examiner</b> Tuan T. Dinh	<b>Art Unit</b> 2841	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/15/03</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. Applicant's election without traverse of Group I (claims 1-16) in the reply filed on 12/12/05 is acknowledged.

Claims 17-26 are canceled without prejudice.

### *Drawings*

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "**thin layer of adhesive, see claim 2, a number of the metal balls is not less than 145 (greater than 145), claim 16 because in figure 4 only shows 104 balls**" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

By applying art, the examiner assumes that claim 16 should be read as "a number of the metallic balls is less than 145."

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 4, 11, 13, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Chan (U.S. Patent 5,838,551) or Nakamura (U.S. Patent 6,229,209).

As to claims 1, 4, 11, 13, and 16, Chan discloses an electronic device as shown in figures 1-7 comprising:

a primary circuit board (motherboard 34-figure 3);

a secondary circuit board (12, column 3, line 29), which is a printed circuit board (claim 13 fixed on the primary circuit board (34)); and a plurality of metallic balls (20,

column 3, line 35), which is less than 145 (claim 16) electrically connected between the primary and second circuit boards (34, 12) for transmitting signals between the primary circuit board and the secondary circuit board, the second circuit board (12) including a communication module or a plurality of electronic components (14, 16) (claims 4 and 13), and the electronic device further comprising a metallic shielding cap (22, column 3, line 45).

As to claims 1-4, and 13-16, Nakamura discloses an electronic device as shown in figures 1-3 comprising:

- a primary circuit board (8);

- a secondary circuit board (1), which is a printed circuit board (claim 13 fixed on the primary circuit board (8); and a plurality of metallic balls (2), which is less than 145 (claim 16) electrically connected between the primary and second circuit boards (34, 12) for transmitting signals between the primary circuit board and the secondary circuit board, the second circuit board (2) including a communication module (3) (claim 4), and the balls (2) made of an alloy of tin and lead having ratio of 63-37, and an adhesive or flux (5), which is used for adhering the balls (2) to the second circuit board (1), claims 2-3, and 14-15.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-3, 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan ('551) in view of Nakamura (U.S. Patent 6,229,209) or Nakamura (209) in view of Chan (551).

As to claims 2-3, 14-15, Chan discloses all of the limitations of the claimed invention, except for a thin layer of adhesive, which is a flux, and the metallic balls are made of an alloy of tin and lead having a ratio of tin to lead of 63:47.

Nakamura teaches a chip carrier (1) mounted on a wiring board (8) as shown in figures 1-3 comprising solder balls (2) made of an alloy of tin and lead having ratio of 63-37, and an adhesive or flux (5), which is used for adhering the balls (2) to the chip carrier (1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a teaching of Nakamura employed in the device of Chan in order to provide excellent connection and reduce heat between the balls to the board/carrier.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura ('209) in view of Chan ('551).

Regarding claim 11, Nakamura discloses all of the limitations of the claimed invention, except for the second circuit board further comprising a plurality of electronic components, and a shielding cap.

Chan teaches the second circuit board (12) comprising a plurality of electronic components (14, 16) and a shielding cap.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a teaching of Chan employed in the device of Nakamura in order to facilitate more functions, and reduce noise of the components mounted on the board.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chan or Nakamura in view of Vendramin (U.S. Patent 5,955,789).

Chan or Nakamura does not specific disclose at least one metallic balls function as a signal output and providing grounding.

Vendramin teaches a package comprising at least one solder balls (303), see figure 3 having function as signal output and grounding (ground ball).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a teaching of Vendramin employed in the device of Chan or Nakamura in order to provide ground connection between board to board connection.

9. Claims 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan (551) in view of Donaldson (U.S. Patent 4,370,515).



Regarding claims 5-10, Chan discloses all of the limitation of the claimed invention, except for the second circuit board comprises at least an electronic component for receiving and transmitting a first type of signal (baseband circuit), at least an electronic component for receiving and transmitting a second type of signal (RF circuit), and a metallic frame and a shielding cap having a shape that comprises two substantially parallel line segments joined at corresponding ends by a line segment that is substantially perpendicular to the two parallel line segments, and a protrusion is positioned on one side of the metallic frame.

Donaldson teaches a miniaturized electronic device as shown in figures 2-12 comprising a circuit board (108) having a plurality of electronic components, and a shielding frame (26, figure 2) with cap (112) dividing the components formed in compartments, the metallic frame having a shape that comprises two substantially parallel line segments joined at corresponding ends by a line segment that is substantially perpendicular to the two parallel line segments, and a protrusion (30) is positioned on one side of the metallic frame.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a teaching of Donaldson employed in the device of Chan in order to provide excellent shielding purpose, and prevent EMI.

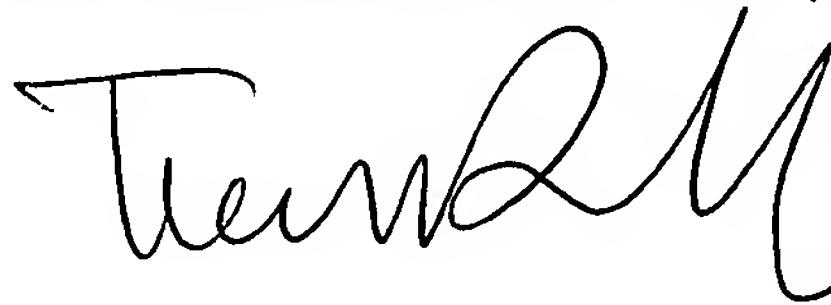


**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T. Dinh whose telephone number is 571-272-1929. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Tuan Dinh', with a long, sweeping horizontal stroke extending to the right.

Tuan Dinh  
February 14, 2006.